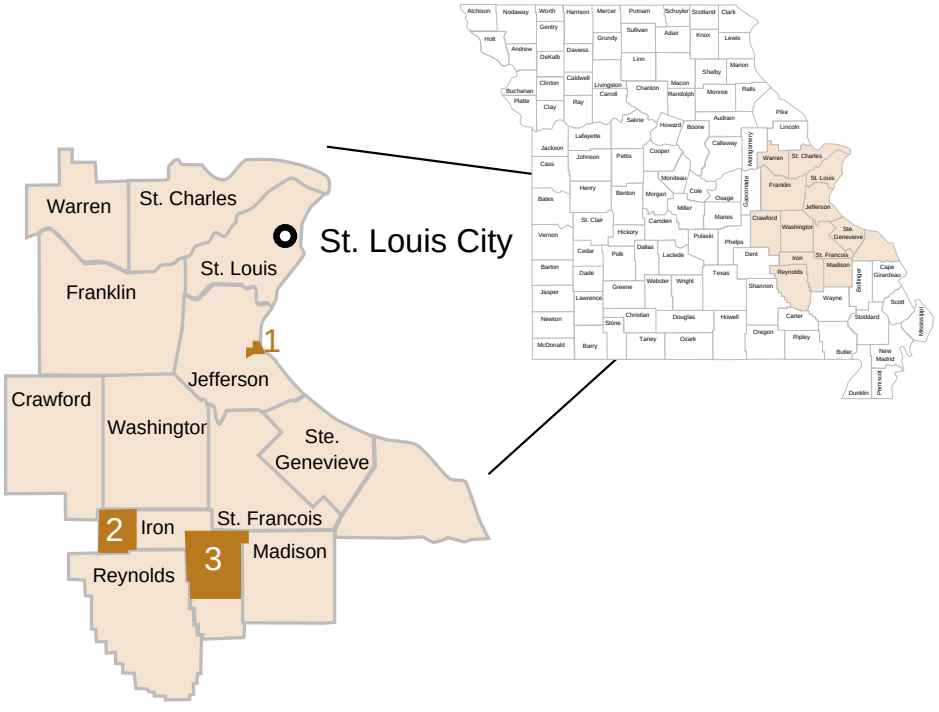
Lead In Missouri

Lead Nonattainment Areas

Lead compounds can cause damage to the brain and nervous system. One site in southeast Missouri still exceeds federal health standards for airborne lead. A smelting facility is located at this site. The federal Clean Air Act Amendments of 1990 require states to bring all nonattainment sites into compliance with the lead standard. With the cooperation of the Doe Run Company, control strategies were developed for sites in Herculaneum, Buick and Glover, MO. The strategies used in Buick and Glover were successful in reducing airborne lead emissions. They are currently still classified as nonattainment areas, although neither area has registered an exceedance in the last eight quarters.

Although air quality in the Herculaneum area has improved in recent years, the area continues to show violations of the lead standard. To solve this problem, the EPA has recommended an additional modeling tool be used to better understand the cause of these violations. This tool, known as Chemical Mass Balance Modeling, allows users to determine individual source contributions by examining the chemical profile, or fingerprint, of each source, and comparing this to samples collected in the ambient air.

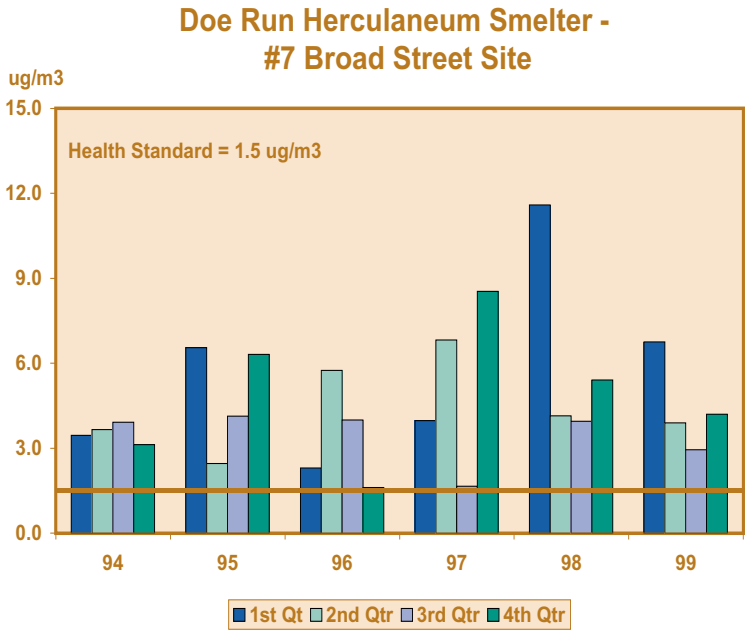
Lead Nonattainment Areas

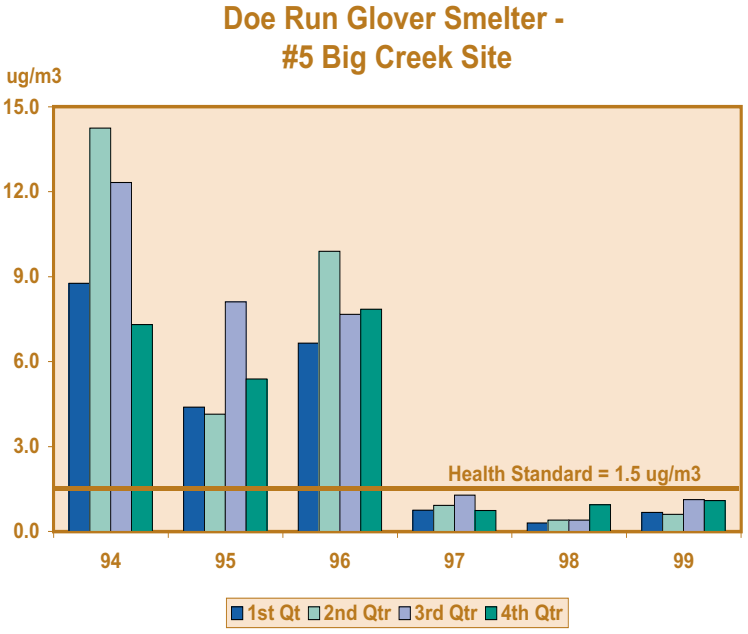


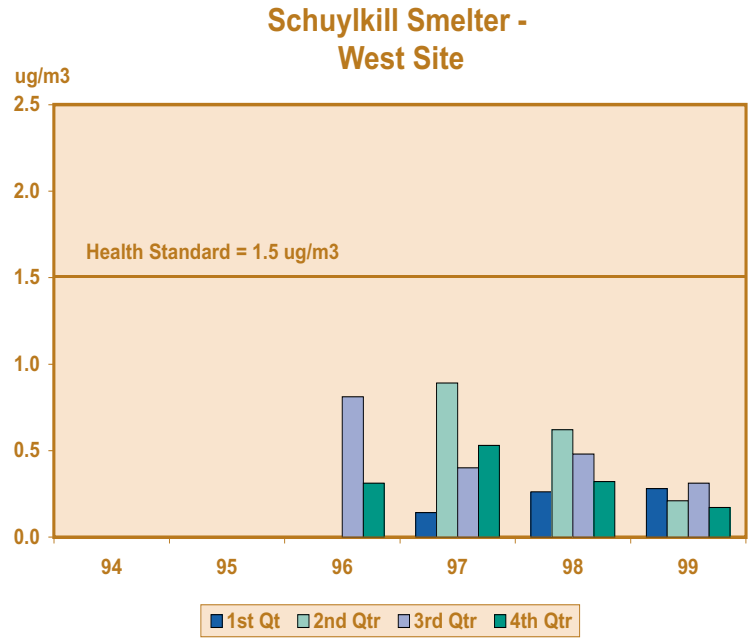
Nonattainment Area		Primary Lead Emitter
1	City of Herculaneum.....	Doe Run, Herculaneum
2	Dent Township.....	Doe Run, Buick
3	Liberty/Arcadia Township.....	Doe Run, Glover

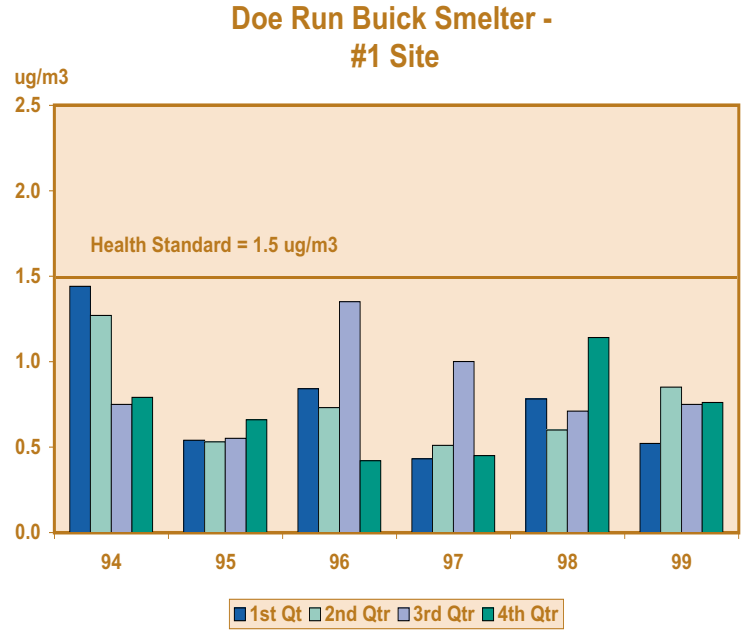
Average Quarterly Concentrations of Lead in Ambient Air Near Lead Smelters in Missouri

Since Missouri is the chief lead-mining district in the nation, with several smelters, the department conducts ambient monitoring for lead. Developed by the EPA, the health standard for lead defines the maximum safe level for human exposure to this otherwise useful metal. The National Ambient Air Quality Standard for lead is 1.5 micrograms per cubic meter, averaged from all the monitor filters in one-quarter of the year. Currently, the Herculaneum smelter is the only one registering exceedances of the airborne lead standard.









Source: U.S. Environmental Protection Agency national AIRS database.

Fine Particulate Matter

$PM_{2.5}$ is primarily generated from combustion sources. It can be emitted directly as particulate, or it can be formed from gases that are emitted, which combine or condense in the atmosphere to make particles. Sulfur or nitrogen compounds are likely to be significant in different areas of the country. In addition to the ambient monitoring currently being conducted, the department plans in the future to conduct sampling that could be analyzed for specific compounds or species of compounds. This would help determine what types of sources are most responsible for $PM_{2.5}$ levels in different parts of the state.

The time schedule for the $PM_{2.5}$ standard to be implemented and attained will take several years because a new monitoring system for this type of pollution must be created. Based on EPA guidance, Missouri has designed a monitoring network of 30 monitors. By the end of 1999, 20 monitoring sites were in operation. The EPA will designate area attainment by 2003 based on three years of gathered data beginning in 2000.

1999 $PM_{2.5}$ Data Summary

24-Hr std = 65ug / m^3,98 Percentile

Annual Mean Std. = 15µg / m^3

Maximum Values

Site Name	1st	2nd	3rd	4th	Annual Mean
West Alton	43.7	40.7	38.0	29.9	14.2
Margaretta	49.4	49.3	45.3	44.9	**15.1**
Blair Street	64.5	50.9	49.4	47.7	**17.3**
Florissant Valley	46.9	44.9	42.1	32.7	14.6
Clayton	55.7	46.7	45.3	31.2	**15.6**
Arnold	46.5	45.4	41.5	31.5	**15.2**
Liberty	28.9	27.2	26.7	25.6	11.2
North Kansas City	37.3	32.7	31.7	31.5	12.2
Sugar Creek	36.2	30.7	30.0	29.9	11.7
Locust	34.9	30.6	29.5	29.2	14.0
Richards-Gebaur	30.1	27.6	26.5	26.5	11.0
Eldorado Springs	31.2	29.9	24.7	24.4	11.3
Mark Twain State Park	38.9	36.3	32.5	29.0	11.1
Ste. Genevieve	42.1	40.4	36.7	29.0	13.8
SW Missouri State University	35.0	31.4	30.4	27.2	12.2
Mountain View	50.2	35.1	33.5	29.3	13.1
St. Joseph	30.8	28.9	28.2	27.6	12.5
Carthage Stone	37.7	32.9	26.7	25.8	13.1

All units are in µg / m^3